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ABSTRACT

A survey of the medical technology profession in North Carolina was undertaken in 1981 by the North Carolina Area Health Education Center to promote statewide planning. One survey focus was institutional characteristics, including: current staff level, budget vacancies, qualifications to fill vacancies, number of resignations in the last year, and projected staff needs for 1986. Individual data included salary levels, years of experience, educational background, and personnel certification. Questionnaires were completed by 119 hospitals and 61 other major employers of medical laboratory personnel. The study included 3,528 laboratory personnel: staff technologists (39 percent), staff technicians (21 percent); laboratory/section supervisors (10 percent); laboratory assistants (9 percent); and administrative/educational or phlebotomist/other categories (21 percent). Findings revealed 173 vacancies, a future need of 635 personnel, and a resignation rate of 24.1 percent. Forty-five percent held bachelor's degrees, 65 percent were certified, and 31 percent had less than 3 years experience. The data indicate a low vacancy rate and high turnover, advancement limitations, and a sometimes negative relationship between years of experience and salary. (SW)

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NORTH CAROLINA MEDICAL TECHNOLOGY MANPOWER SURVEY

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ABSTRACT

The need for reliable statistical manpower information is essential for adequate planning of educational programs for laboratory professionals. In 1981 lack of such data forced the North Carolina Area Health Education Center Program (AHEC) to undertake a statewide manpower study. Data was collected using a survey instrument constructed by a committee of educators from University Medical Technology Programs, the AHEC regions, Central AHEC staff and the North Carolina Society for Medical Technology. The survey was administered through the AHEC system. 89% of hospitals (weighted by bedrate) and 45% of other institutions responded. The resulting report provides institutional level data on members of total staff (3,528), vacancies (173), future manpower needs (635) and resignation rates (24.1%) and individual level data on educational background (45% B.A./B.S.), certification (65% with certification), experience (31% < 3 years) and salary ($6.36 per hr). Data indicates low vacancy rate and high turnover, lack of possibilities for advancement and a sometimes negative relationship between years of experience and salary. Data of this quality is a valuable planning tool and change agent available to educators and laboratory professionals in the state.

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INTRODUCTION

One of the essential ingredients for any successful educational program is a firm understanding of the nature of potential participants; who are they? Where are they located? What level of education have they already achieved? Unfortunately this information is not always readily available. It has been recognised that "one of the weakest information links in the entire manpower analysis effort is that of Allied Health manpower"[1].

Three years ago, as the North Carolina Area Health Education Center (AHEC) Program developed its five year plan of strategies for educational programming, the need for current, reliable, and comprehensive manpower information became acutely evident. Since little relevant manpower data was available for several disciplines, the AHEC Program found it difficult to plan for future program activities in Allied Health.

METHODOLOGY

To fill this information gap, the North Carolina AHEC Program undertook the task of conducting a statewide Allied Health manpower survey. The project was supported in part by a grant from the North Carolina State Health Planning and Development Agency. This was the first time a survey for Allied Health Professionals had been conducted in North Carolina. The survey was patterned after a statewide Nursing manpower survey completed in 1980. The Nursing survey was chosen as a model because it emphasized confidentiality, had a good return rate, and was published as a nonjudgmental, and factual report, acceptable to all involved parties. In order to make the Allied Health manpower survey manageable, it was limited to four major Allied Health professions: physical therapy, respiratory therapy, medical technology, and radiologic technology. Discipline specific survey instruments were developed and administered separately in each of these areas. The Medical Technology Employer survey instrument was developed

by a committee composed of AHEC Regional Allied Health Education Coordinators, representatives from the University of North Carolina - Chapel Hill Department of Medical Allied Health Professions, the Central AHEC Program office, and the North Carolina Society of Medical Technology and pretested in the summer of 1981.

The survey questionnaire was divided into two types of data, institutional and individual. Institutional data included current staff level, budget vacancies, qualifications to fill vacancies, number of resignations in the last 12 months, and projected staff needs for 1986. Individual data included salary levels, years of experience, educational background, and certification for each laboratory worker.

During the fall of 1981, the questionnaires were mailed to hospitals (excluding alcohol rehabilitation centers and mental hospitals) as well as other major employers of medical laboratory personnel identified from the North Carolina Society for Medical Technology mailing list. The questionnaire and personal letter of endorsement stressing confidentiality were sent by each of the nine AHEC Regional Directors to the administrators of the facilities in their individual region. (see Figure #1) Copies of these were sent with an explanatory letter from the AHEC Allied Health coordinator to the laboratory managers or technical directors of the individual institution or agency. The laboratory managers or technical directors completed the form and mailed it back to the regional AHEC Allied Health Education coordinators. The coordinators, acting as a central point of contact, were available to answer questions about the terms on the questionnaire by telephone or in person during site visits scheduled as a follow-up to the mailing. Response rate was increased approximately 30% by follow-up telephone and personal contacts with nonrespondents. The AHEC Program's strong commitment to confidentiality and agreement to share survey

results with respondents helped overcome apprehension and reluctance to participate.

The data was analyzed by computer at the Central AHEC Program office in Chapel Hill, North Carolina. Response rate was examined: 147 hospital surveys sent, 119 (81%) were returned. According to data from the State Center for Health Statistics, most nonresponding hospitals were small and did not perform laboratory tests. The other 137 institutions surveyed returned 61 (45%) completed questionnaires.

Another way of looking at response is to consider hospital bed capacity. The responses of hospitals with larger bed capacities were weighted heavier than those with fewer beds. Response rate represents 89% of the hospital beds in North Carolina. (see Table I) Hospital bed size was determined from the 1980 "Application for Renewal of License to Operate Hospital" published in the Health Facilities Data Book, State Center for Health Statistics, North Carolina Department of Human Resources.

PUBLISHED REPORT

A published report of results of the survey was distributed to all participants free of charge and included the following results.

Current Staffing

A total of 3,528 laboratory personnel were included in the survey. Of these, 39% were staff technologists, 21% staff technicians, 10% laboratory/section supervisors, 9% laboratory assistants with the remainder in the administrative/educational or phlebotomist/other categories. (see Table II) There were no definitions of these categories provided on the survey instrument. Definitions were left to the discretion of the individual completing the form. There is evidence to suggest that category selections were not based on the same criteria. Discrepancies in the educational

attainment and certification of individuals listed in the various job categories illustrates the current confusion in the profession regarding job classification.

Clinics, private laboratories and most hospitals reported a greater proportion of technologists (40-43%) than technicians (16%-20%). Health Departments and smaller hospitals (100-250 beds), on the other hand, had a higher proportion of technicians (40%) than technologists (27%). Consistant with this reversal, health departments and hospitals (100-250 beds) reported a greater proportion of laboratory/section supervisors to the total number of staff technicians and technologists employed. (see Tables III and IV)

Vacancies, Turnover and Future Needs

There were 171 budgeted vacancies (5%) upon completion of the survey. There were 86 vacancies (6.7%) among staff technologists. This was the highest reported vacancy rate. Geographically, the highest total vacancies occurred in the eastern part of the state. (see Figure #2) Area L had the lowest number of medical technologist and the highest vacancy rate for this group. The lowest total vacancy rates occurred in the largest hospitals (>500 beds) and the highest total vacancy rate occurred in the smallest hospitals (<100 beds). (see Table V) When asked for the preferred training and education requirements for applicants to fill budgeted vacancies, 40% of respondents indicated preference for baccalaureate degree and some form of formal certification. Need for additional future personnel was projected to increase 10% (362 positions) by 1982, and 18% (635 additional positions) by 1986. Projected increases by AHEC region range from 4.9% of current levels in the Unaffiliated area to 38.2% in the Eastern region. Hospitals and health departments indicate a need for more technologists, while other laboratories and clinics project a greater need for

more technicians. When looking at hospitals by bed size within the regions, hospitals with less than 100 beds are projecting a personnel increase of 38.8%, while the largest hospitals with more than 500 beds are projecting a 4% increase in positions by 1986.

The preceding figures indicate need for additional laboratory personnel to be recruited. This number, however, does not take into account the resignation rates. (see Figure #3) At the time of the survey, 834 resignations had been received during the preceding 12 months representing 34.1% of current staff levels. The highest resignation rates were in the technologist and technician categories and the lowest were for laboratory section supervisor. The resignation rate varied by institution type. Hospitals averaged 25%, health departments 12% and other laboratory clinics 8.1%. In addition, there appears to be regional variations. Eastern AHEC region has a moderate resignation rate of 32% but the highest vacancy rate of 10%. In contrast, the Unaffiliated AHEC region has the highest resignation rate (44%) but one of the lowest vacancy rates (3.6%). This may be a result of employment patterns by the many large hospitals (>500 beds) in this region and the close proximity of several major universities. The western Mountain AHEC region has the lowest resignation rate at 13%.

Usable individual data was received for 2,669 or 76% of the total staff of 3,528. Differences in educational levels in the state became evident when data was categorized by institution size, job category, and AHEC region. The highest concentration of degree personnel was in the center of the state and dropped by AHEC region as it was further removed east or west.

Education, Experience, Certification & Salary

33% of all laboratory personnel had three years or less experience. 50% of chief technologists had ten years or more experience, while 42% of

laboratory managers had three years or less. This last item could be accounted for by the newness of the laboratory manager position as compared to the chief technologist designation. In general institutional longevity was greater for personnel in small hospitals and health departments.

The data indicates that 65% of all laboratory personnel have some type of certification. (see Table VI) 89% of laboratory section supervisors and technologists are certified; 64% of staff technicians, 16% of laboratory assistants, and 8% of phlebotomists. For most of the state, salary differential between staff technologist and staff technicians are not clearly demonstrated. Staff technologists with B.S. degree tend to make slightly more than staff technologists with M.S. degree. There is no mechanism, using the survey instrument, to explain this discrepancy. Educational level data was not collected in such a way that it could be correlated with certification and other possible variables for individuals holding an M.S. degree. Salary data was returned on 71% of the staff or 2,503 positions with an average wage of $6.86 per hour and a range from $4.59 average for phlebotomists to $10.63 average for administrative technologist/laboratory managers. One relationship shows an average hourly wage inversely proportional to longevity for laboratory/section supervisors. Individuals in this category with three or less years of experience were receiving up to $4.00 per hour more than individuals with over ten years experience.

In general, certified individuals make a higher wage than non-certified personnel through the first ten years of practice. Beyond ten years, the wages are roughly equivalent. Hospital size seemed to influence the spread of wage rate controlled for experience with small hospitals having the spread of 61¢ between three and ten years of experience, while in the larger hospitals (>500 beds) $1.60 is the spread between three and ten years experience.

SUMMARY AND CONCLUSIONS

Rate of Response

The North Carolina statewide manpower survey of medical laboratory personnel yielded an excellent rate of response and quality data probably due to three major factors:

The distribution and follow-up was accomplished through an already established network which had the track record of producing unbiased quality reports and preserving promised confidentiality.

Questionnaires were developed jointly by representatives of individual professions, employer institutions and educational institutions, assuring answers relevant to each.

The responsibility for follow-up was given to a small group (9) individuals who were involved and committed to the success of the venture from the outset.

Information Results

The survey provided information not previously available in three major areas:

Needed manpower data for the planning of educational programs by the universities and AHEC's.

Individual level data on general relationships between education, experience and pay to assist individuals and institutions in identifying current market levels.

In addition, the survey revealed potential problem relationships which if further explored might be useful in implementing change to alleviate problems in geographic distribution, laboratory productivity, cost, and employee morale.

Potential problems in current employment policies and practices related to laboratory personnel in North Carolina identified includes:

Discrepancy between expressed desired level of education for new employees and actual level of education of current employees.

Average wages being generally lower for laboratorians than for most other health care employees with similar education and experience.

Limited room for upward mobility and expanded professional functions of laboratory scientists due to low turnover and vacancies in upper level positions.

Ratio of staff to supervisors higher than in other professional groups.

Unclear relationships between education, experience, functions and pay.

Lack of consistency described by professionals themselves in what constitutes appropriate credentials for each functional level of practice in the laboratory.

High levels of turnover and low number of years of average experience of practitioners indicating a flight from specific institutions and possibly from the profession as a whole raises questions about the adequacy of current laboratory management practices and educational programs.

REFERENCES

1. Bureau of Health Manpower, A Report on Allied Health Personnel, Washington, D.C.: U.S. Government Printing Office, 1979, p.II-3

NORTH CAROLINA AHEC REGIONS

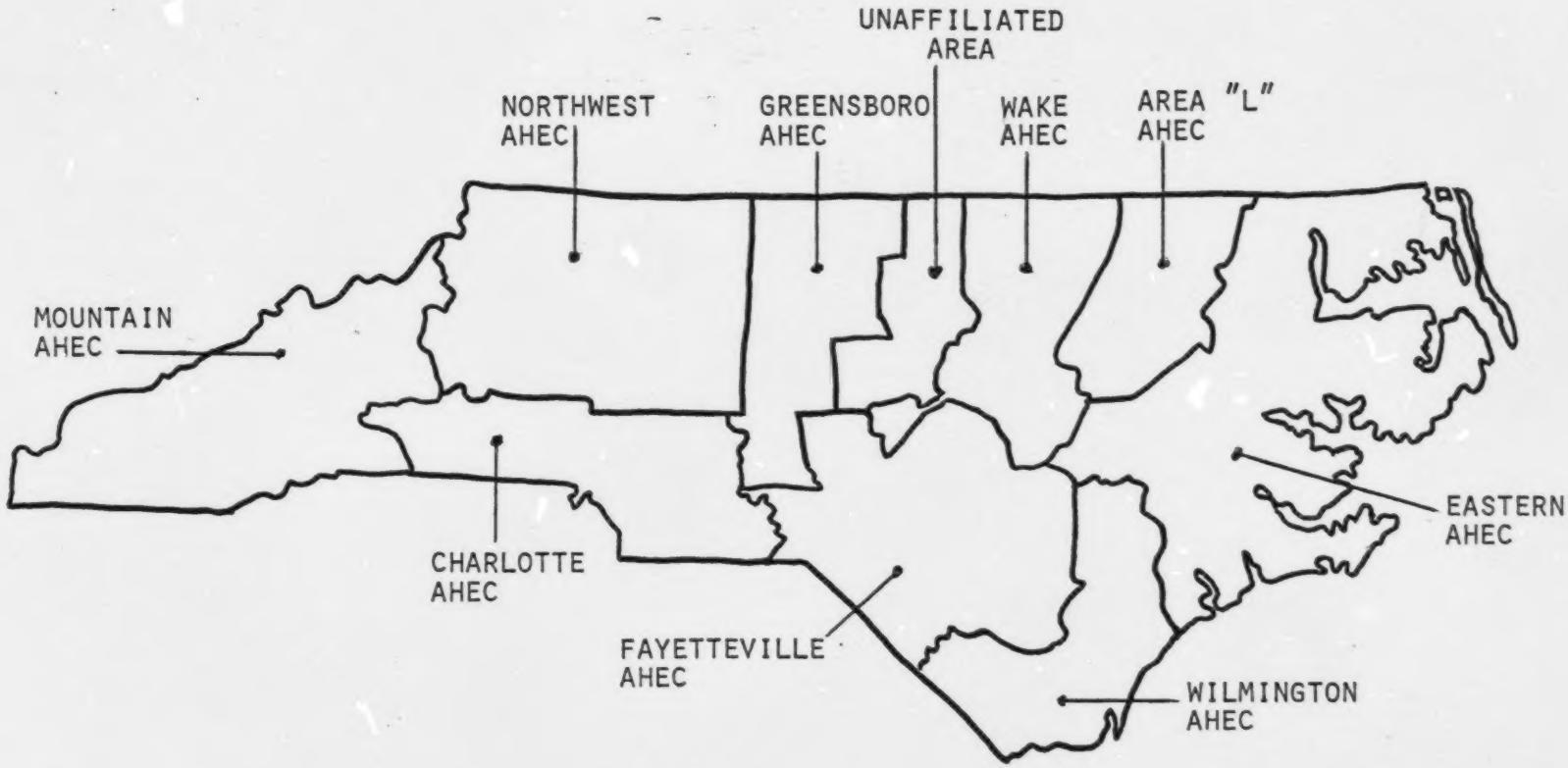

FIGURE #1

1981 NORTH CAROLINA AHEC
MEDICAL TECHNOLOGY MANPOWER SURVEY

RESPONSE RATE

INSTITUTION	MAILED	RETURNED	% OF INSTITUTION	% WEIGHTED BY BED SIZE
HOSPITALS	147	119	81%	89%
OTHERS	137	62	45%	-

TABLE 1

1981 NORTH CAROLINA AHEC
MEDICAL TECHNOLOGY MANPOWER SURVEY

CURRENT STAFF STATEWIDE

JOB CATEGORY	NUMBER	% OF CURRENT STAFF
CHIEF TECHNOLOGIST	96	2.7%
ADM. TECHNOLOGIST/ LAB. MANAGER	74	2.1%
LAB/SECTION SUPERVISOR	336	9.5%
PROGRAM DIRECTOR/ EDUCATION COORDINATOR	21	0.6%
INSTRUCTOR	22	0.6%
STAFF TECHNOLOGIST	1,364	38.7%
STAFF TECHNICIAN	748	21.2%
LAB. ASSISTANTS	302	8.6%
PHLEBOTOMIST/OTHER	565	16.0%
TOTAL	3,528	100.0%

TABLE 11

1981 NORTH CAROLINA AHEC
MEDICAL TECHNOLOGY MANPOWER SURVEY

SELECTED JOB CATEGORIES BY
TYPE OF INSTITUTION

TYPE TYPE	LAB/SECT. SUPERVISOR	STAFF TECHNOLOGIST	STAFF TECHNICIAN	ALL PERSONNEL
HOSPITALS	9.4%	39.2%	20.2%	3,193
HEALTH DEPARTMENTS	12.5%	26.5%	40.5%	200
OTHER LABS/ CLINICS	7.4%	43.0%	15.6%	135
TOTAL	9.5%	38.7%	21.2%	3528

TABLE III

1981 NORTH CAROLINA AHEC
MEDICAL TECHNOLOGY MANPOWER SURVEY

SELECTED JOB CATEGORIES BY HOSPITAL BED SIZE

HOSPITAL SIZE	LAB/SECT. SUPERVISOR	STAFF TECHNOLOGIST	STAFF TECHNICIAN	ALL PERSONNEL
<100 BEDS	4.5%	36.1%	23.0%	291
100-250 BEDS	11.9%	26.4%	29.7%	666
251-500 BEDS	11.4%	39.7%	17.4%	1,048
>500 BEDS	7.6%	46.8%	16.8%	1,188
TOTAL	9.5%	39.2%	20.2%	3,193

TABLE IV

1981 NORTH CAROLINA ALLIED HEALTH MANPOWER SURVEYS

MEDICAL TECHNOLOGY VACANCY RATES

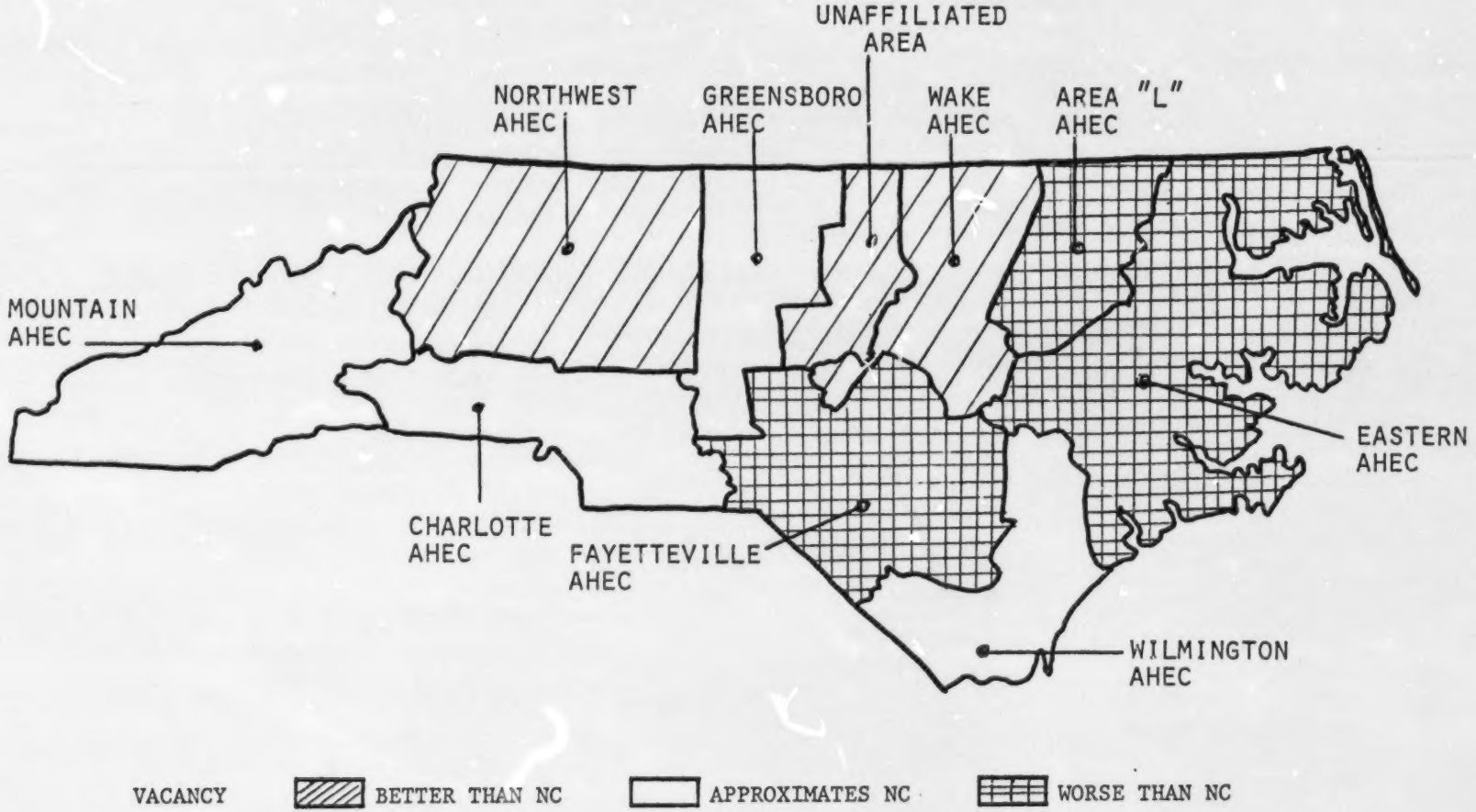

FIGURE #2

1981 NORTH CAROLINA AHEC
MEDICAL TECHNOLOGY MANPOWER SURVEY

CURRENT VACANCIES & ADDITIONAL NEEDS DURING 1986
AS % OF CURRENT STAFF FOR HOSPITALS

	<100 BEDS		100-250 BEDS		251-500 BEDS		>500 BEDS	
CURRENT STAFF	291		666		1,048		1,188	
VACANIES	21	7.2%	39	5.9%	58	5.5%	31	2.6%
ADDITIONAL NEEDS - 1986	113	38.8%	194	29.1%	218	20.8%	47	4.0%

TABLE V

1981 NORTH CAROLINA AHEC ALLIED HEALTH MANPOWER SURVEYS
MEDICAL TECHNOLOGY RESIGNATION RATES

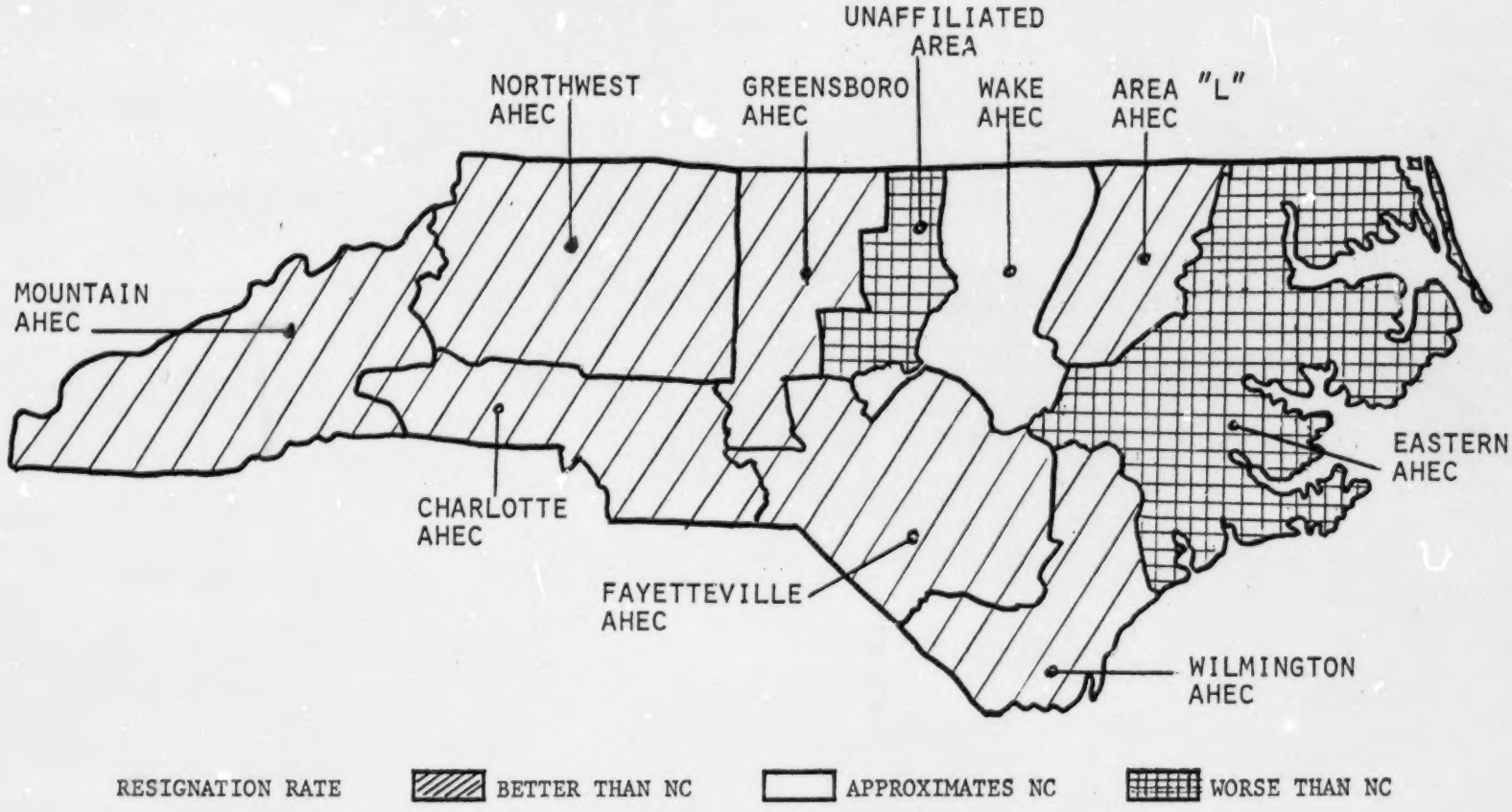

FIGURE #3

1981 NORTH CAROLINA AHEC
MEDICAL TECHNOLOGY MANPOWER SURVEY

CERTIFICATION

Lab/Section Supervisors	89%
Staff Technologists	89%
Staff Technicians	64%
Lab. Assistants	16%
Phlebotomists	8%

TABLE VI